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ELECTROENCEPHALOGRAPHIC CORRELATES OF TEMPORAL LOBE SIGNS AND IMAGININGS

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Summary.—Significant correlations (0.50) were observed again between scores for the Wilson-Barber Inventory of Childhood Memories and Imaginings and the numbers of experiences that are indicative of temporal lobe lability. In addition, positive correlations (0.42) occurred between temporal lobe EEG measures (scalp electrodes) and numbers of temporal lobe signs. The numbers of alpha seconds per minute from the occipital lobes were correlated (0.57) with the Wilson-Barber cluster that indicated interests in "altered states". Scores on the childhood imaginings section of the Wilson-Barber Inventory were correlated (0.44) with the numbers of spikes per minute over the temporal lobes when the eyes were closed.

People who more frequently report mystical (paranormal) experiences are also more likely to display temporal lobe signs (Persinger & Valliant, 1985). These signs and experiences are correlated positively with electroencephalographic (EEG) activity of the temporal lobe but not with the occipital lobe (Makarec & Persinger, 1985). Persinger and DeSano (1986) found that people who display temporal lobe signs were also more likely to have more imaginings (as defined by Wilson and Barber's (1983) Inventory of Childhood Memories and Imaginings) and to be more suggestible as indicated by Spiegel's Hypnosis Induction Profile. If the relationships were consistent, then there should be significant intercorrelations between imaginings, temporal signs and EEG activity.

Twelve male and 18 female students from a first-year psychology course (continuing education) served as subjects. Their ages ranged from 18 to 39 yr. (M = 25 yr.). All students from the class were evaluated. Within a 2-wk. period, each student's EEG was taken after the procedure of Makarec and Persinger (1985). Essentially, bipolar measures were taken from the scalp just above the ears (approximately T3-T4) and the occipital lobe (01-02) along the same horizontal plane. The numbers of alpha seconds per min. and the number of spikes per min. from each lobe was taken for 10 min. (5 successive pairs of 1 min. eye-open; 1 min. eye-closed). A spike was defined as a sharp transient whose amplitude was more than twice the width of the baseline activity (peak to trough). These transients were visually conspicuous (see first spike, Fig. 4, Persinger, 1984). Measurements were taken in a quiet room after approximately 10 min. of habituation.

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About midway within the 2-wk. period, both the Personal Philosophy Inventory (Persinger & Makarec, 1987) and the Wilson-Barber Inventory were administered in a single setting. The inventory contains items that compose temporal lobe and control clusters. The traditional major temporal lobe cluster contained 29 items. Recently, we (Persinger & Makarec, 1987) have emphasized 16 items that are the most common experiences of complex partial epilepsy. All statistical analyses were completed with SPSSX on a DEC2020 computer. The Spearman-Brown coefficients for the two temporal lobe clusters were 0.75, 0.74, and the KR-20s were 0.70, 0.71. Two clusters of control items had KR-20 of less than 0.50. The KR-20 for the total imaginings score was 0.79 while the Spearman-Brown coefficient was 0.56. The mean correlation between individual items and total cluster scores were 0.35 and 0.43 for the major and minor clusters of temporal lobe items with no cases of inconsistent direction of relation. The mean correlation of each item on the imaginings scale with the total score was 0.30.

The means and standard deviations for the scores on the major cluster, minor cluster and imaginings scales (calculated by dividing the number of yes responses by the total numbers of items and multiplying by 100) were 33 ± 12, 33 ± 14, and 33 ± 19, respectively; these scores in the Persinger and DeSano study were 37 ± 15, 29 ± 11, and 23 ± 11, respectively. The means and standard deviations for alpha seconds per min. (average of 5 min.) from the two different scalp areas (O or T) when the eyes were either opened or closed (O or C) were: OO (5 ± 7), OC (20 ± 13), TO (2.3 ± 7.3), and TC (5.1 ± 6.1); the number of spikes per min. from these areas and conditions were 1.6 ± 1.7, 1.3 ± 1.8, 1.0 ± 1.9, and 0.8 ± 0.6, respectively. There were no significant differences between sexes for any of the above measures.

Correlations were completed between the scores on the Wilson-Barber scale and its subclusters (Persinger & DeSano, 1986) and the scores on the temporal lobe and control items. The total Wilson-Barber score was significantly ($p < .01$) correlated (all values are Pearson *r*s; they did not differ appreciably from Spearman *rhos*) with the major (0.46) and minor (0.50) temporal lobe clusters but not with two clusters of control items: normal psychological experiences (0.21) and mundane proprioceptive experiences (0.29). These correlations are similar to those in the Persinger and DeSano study (0.60, 0.50, 0.13, and 0.14, respectively). Like the first study (0.53), the items that were most associated with dissociation (depersonalization) were best correlated with the Wilson-Barber scores (0.60). The Wilson-Barber subcluster: adults' extreme experiences (Items 44 through 52, that indicate physiological changes associated with thinking) was again most strongly correlated with the major (0.55) and minor (0.65) temporal lobe clusters; these values were 0.42 and 0.52 in the first study.

The only statistically significant ($p < .01$) correlations between the Wilson-Barber scales and the EEG measures were between the number of alpha seconds from the occipital lobe (with the eyes closed) and the "altered state" cluster ($r = 0.57$; Items 33, 41, 42, 43). A weaker correlation (0.36) occurred between the number of alpha seconds per min. (eyes-closed condition) and childhood vestibular experiences (Items 1, 2, 3, 10, 24). The only significant correlation between temporal lead EEG measures and imagining scores occurred between the number of spikes (eyes closed) and extreme childhood imaginings cluster ($r = 0.44$, Items 17, 22, 25, 26, 29, 32). It may be relevant that both the numbers of spikes per min. from the temporal lobe during the eyes-open (0.38) and closed (0.37) conditions were weakly correlated ($.01 < p < .05$) with the total Wilson-Barber score while spikes from the occipital lobe were negatively correlated ($p < .05$) with the total score.

As expected from other studies, the number of alpha seconds per min. from the temporal lobe (eyes closed) but not the occipital lobe were correlated with scores on the major temporal lobe cluster (0.42). The strongest correlation for any of the subclusters occurred between the number of alpha seconds per min. from the temporal lobe (eyes open and closed) and the four items concerning odd smells (0.52, 0.57). Scores on the two clusters of control items did not correlate significantly with any of the EEG measures. Interesting, weak correlations (≈ 0.40) occurred between numbers of paranormal experiences (items of which are not a part of the temporal lobe clusters) and the numbers of spikes per min. from the temporal lobe when the eyes were open or closed. This is relevant because scores on this cluster are consistently correlated (≈ 0.60) with scores on the temporal lobe clusters.

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